

Amendments to the Claims

Listing of Claims:

1. (Original) A device for manipulating particles using dielectrophoresis, the device comprising:
a substrate across which the particles move;
a non-uniform array of insulating features on the substrate; and
a plurality of electrodes positioned to generate a spatially non-uniform electric field across the non-uniform array.
2. (Original) A device according to claim 1, wherein the insulating features vary in size across at least a portion of the substrate.
3. (Original) A device according to claim 1, wherein the insulating features vary in shape across at least a portion of the substrate.
4. (Original) A device according to claim 1, wherein spacing between adjacent features in the array varies across at least a portion of the substrate.
5. (Original) A device according to claim 1, wherein the insulating features are formed on a wall of a channel or chamber.
6. (Original) A device according to claim 1, wherein the substrate comprises glass or polymer.
7. (Original) A device according to claim 1, wherein the insulating features comprise an insulating material supported by a non-insulating material.
8. (Original) A device according to claim 1, further comprising a voltage source connected to the plurality of electrodes.
9. (Original) A device according to claim 5, further comprising a fluid port connected to the channel or chamber.
10. (Original) A device according to claim 1, wherein the spatially non-uniform electric field generated across the ridges exerts a dielectrophoretic force on at least one of said particles.
11. (Original) A device according to claim 10, wherein said particles comprise particles selected from the group of particles consisting of bacteria, cells, and viruses.

12. (Original) A device according to claim 1, wherein the non-uniform array is a radial array.
13. (Original) A device according to claim 12, wherein the insulating features comprise posts, and the diameter of the posts increases according to their radial position in said radial array.
14. (Original) A method for manipulating particles using dielectrophoresis, the method comprising:
generating a spatially non-uniform electric field;
passing a sample fluid containing the particles across the non-uniform array, the spatially non-uniform electric field exerting a dielectrophoretic force on the particles thereby constraining motion of at least one particle; and
trapping at least one particle at a location in the non-uniform array, wherein the location is determined at least in part based on electric and geometrical properties of the particle.
15. (Original) A method according to claim 14, further comprises trapping a first group of particles having a first dielectrophoretic mobility at a first location in the non-uniform array and a second group of particles having a second dielectrophoretic mobility at a second location in the non-uniform array.
16. (Currently Amended) A method according to claim 14, wherein the act of passing the sample fluid across the non-uniform array comprises electrokinetic transport, advection, sedimentation, buoyancy, or ~~magnetophoresis~~ magnetophoresis.
17. (Original) A method according to claim 14, further comprising:
changing the spatially non-uniform electric field such that the dielectrophoretic force on the first particle is decreased; and
transporting the first particle to a second location in the non-uniform array; and
trapping the first particle at the second location.
18. (Original) A method according to claim 17, further comprising:
changing the spatially non-uniform electric field such that the dielectrophoretic force on the first particle is decreased; and
transporting the first particle to an outlet port.